

REMARKS

The present case is a continuation of U.S. Serial No. 09/482,745, filed January 13, 2000 and due to issue on May 1, 2001 as U.S. Patent No. 6,226,785, which is a continuation of U.S. Serial No. 08/315,726, filed September 30, 1994, now abandoned. The original application was filed with claims 1 – 18. Applicant herein deletes claims 1 - 18 and adds new claims 19 - 27.

New claims 19 - 27 correspond to claims 33 - 36 and 39 - 43, respectively, in U.S. Patent No. 09/482,745. Applicants cancelled those claims without prejudice and are now reinstating those claims with some revisions as claims 19 - 27. The Examiner rejected claims 42 and 43 under 35 U.S.C. Section 101 as directed to non-statutory subject matter. The Examiner had rejected claims 39 - 41 under 35 U.S.C. Section 103(a) in view of U.S. Patent No. 5,157,779 (Washburn et al.). The Examiner rejected claims 33 - 35 and 42 under 35 U.S.C. Section 103(a) in view of U.S. Patent No. 5,524,193 (Covington et al.).

With regard to former claims 42 and 43, revised and newly numbered as claims 26 and 27 in the present application, Applicants disagree with the Examiner's rejection of these claims under Section 101. A computer-readable medium is a statutory class of subject matter under 35 U.S.C. Section 101. In any regard, Applicants have revised claim 42 to read in-part "a first field containing data which specifies a particular action class and a second field containing data which specifies a generic explanation of the action specified in the corresponding first field". Applicants respectfully submit that claims 26 and 27 are statutory subject matter and satisfy Section 101.

With regard to former claims 39 - 41, revised and newly-numbered as claims 23 - 25, Applicants respectfully disagree with the Examiner's rejection under 35 U.S.C. Section 103(a) in view of Washburn.

Washburn et al. discloses a user extensible, automated testing system which provides for the recording and playback of user actions so that a user-defined test can be run on software in an identical fashion a repeated number of times. The Washburn testing system records events in a journal file, the events being representative of user actions taken to enable, initiate and execute certain tasks to test the computer system and/or software operating on the computer system. (col. 2, lines 64 - 68 and col. 5, lines 19 - 29 and lines 53 - 61) The journal file is subsequently replayed to repeat the test whereby each event

recorded is read from the journal file and input to the window system in the sequence recorded. The window system responds to the events as if the events were received from the input devices, thereby executing the test. (col. 5, lines 19 - 29)

The Washburn et al. system also includes a filter module for filtering out data which is not determinative of the pass or fail status of a test. To enable a filter function, the user, during the capture sequence, selects a menu item which causes the particular filter function or functions to be selected. (col. 7, lines 40 - 42)

In contrast to the software testing system disclosed in Washburn et al., the present invention is directed to a system for the recording and replaying of actions performed during creation of software content such as, for example, multimedia content. In an aspect of the invention, the system is instructional, allowing review of the creation and evolution of all or part of multimedia content and providing insights into the creative process. The system includes, among other things, a recording mechanism and a playback mechanism.

The recording mechanism records the steps performed during the development or modification of multimedia content, preferably recording the steps at a granularity, i.e. level of detail, which provides insight into the creative process and is useful for instructing authors on the development of the content. As part of the granularity, the recording mechanism is preferably designed to record important information, ignoring irrelevant activity. The recording mechanism may provide authors with only a single granularity throughout or it may vary between a plurality of granularities, selecting an appropriate granularity based on context and/or user-specified preference.

The playback mechanism simulates the process of performing each step in the order in which it was recorded and, preferably, includes annotation using text, recorded or computer-generated voice, video and/or graphic animation. The level of details in the replay may vary according to the context in which the replay is occurring. For example, an event can described in some detail the first time it is explained and then later references to that event or similar events can be described in a more general manner.

In an embodiment of creation replay an action class list specifies which action classes, i.e. categories of events or types of events, are recorded by the recording mechanism. For each action class, the action class list further specifies an explanation, verbal, text, video and/or animation, describing the particular action class. When an action is

played back, it is preferably accompanied by the explanation associated with the action class of the action.

Preferably, an authoring tool embodying the invention allows an author to specify criteria for which actions are to be played back, thereby providing an author with a mechanism for focusing on a particular subset of the recorded actions.

The present invention is significantly different and patentably distinct from that disclosed in Washburn for at least the reasons discussed below. First, as admitted by the Examiner, Washburn "does not disclose their product as a multimedia product." (Office Action, page 6). In contrast, the present invention provides for the development of multimedia content and allows the review of such development.

Second, Washburn does not disclose recording and playing back events in such a way as to provide instruction and insight on the developmental process. Rather, the system in Washburn is directed to recording all events and playing them back in such a way as to provide repeated identical testing of software. (col. 5, line 66 -col. 6, line 4). The present invention, on the other hand, provides for recording and playing back of actions at different granularities so as to provide instruction and insight into the creative process of developing multimedia content. Authors are provided with a mechanism which they can use to understand the creative process that was used to create or modify a particular content such as a multimedia product. Understanding how content of others is created will usually help authors to advance their own content production skills or to modify the works of others, e.g. the multimedia product for which they are watching creation replay. End-users of multimedia products can use creation replay to learn about how the multimedia product was created, thereby gaining information on how to modify the product for their own individual uses. Additionally, by recording the events in the development process at a scale where each action has a meaning, or represents an entire task or operation, rather than recording each and every individual event, the amount of memory resources used to store the creation replay data is reduced. The use of memory resources is further minimized by pruning unimportant activities and periods of inactivity.

Third, the present invention allows annotation along with the playback of the steps. Such annotation can supply authors with helpful information that supplements the simulation of the steps, thereby creating a more educational and instructive environment. Washburn et al. does not disclose such annotation.

Fourth, the present invention allows an author to specify criteria for the playback of the actions, so that the author can tailor the playback to meet his/her individual needs, thereby increasing the educational value and overall effectiveness of the invention. Washburn et al. does not provide such a mechanism. The filtering mechanism in Washburn et al. is directed to filtering of data to remove data which is not determinative of the pass or fail status of a test. Although Washburn et al. allows a user to manually edit the journal file, to add, edit or delete the recorded events, Washburn et al. does not seem to disclose a mechanism for specifying criteria to automatically filter out which steps are played back, whereby steps which satisfy the specified criteria are filtered out by a playback or playback selecting mechanism before or during replay. Washburn et al. does not seem to disclose a system which allows arbitrary criteria to be specified. Moreover, Washburn et al. does not seem to disclose a system which matches recorded actions with specified arbitrary criteria in order to determine which recorded actions to replay. Nor does Washburn et al. seem to disclose a system which matches recorded actions with specified criteria in order to determine which recorded actions to replay, the determined actions not necessarily being sequential. These differences, among others, are discussed below with respect to the Claims.

Regarding, claim 23, although Washburn et al. allows a user to manually edit the journal file, manually adding, editing or deleting the recorded events, Washburn et al. does not disclose a mechanism for specifying arbitrary criteria to automatically determine which steps are played back, whereby steps which satisfy the specified criteria are determined by a playback or playback selecting mechanism before or during replay. Claim 23 specifically recites in part "determining automatically which recorded actions satisfy a specified arbitrary criteria;" and "playing back a sequence of only those determined recorded actions in chronological order on an output device". At col. 20, lines 18 - 24, Washburn discusses that a user can add information in the journal file. As an example, the user may select the add function and manually perform user actions to perform a bit map save. This is drastically different from the claimed invention in which it is automatically determined which recorded actions satisfy a specified arbitrary criteria and only those recorded actions are played back. Therefore, claim 23 is patentably distinct from Washburn and should be allowed.

Claim 24 is likewise patentable over Washburn for at least the reasons discussed relative to claim 23. The Examiner cited Washburn at col. 20, lines 3 - 4 as disclosing

"determining which recorded action to play back". Applicants respectfully disagree with the Examiner's interpretation of this portion of Washburn. At col. 19, line 65 - col. 20, line 8, Washburn discusses a method for manually editing the journal file. A user may delete, add or otherwise change an event by selecting the desired script. The high level script is transformed back into the binary form and the journal file is updated. This is significantly different from claim 24 wherein if a playback request is indicated, then it is determined automatically which recorded actions to play back by determining which recorded actions meet a specified arbitrary criteria and playing back those determined recorded actions. Therefore, claim 24 is patentably distinct from Washburn.

Claim 25 is also patentable over Washburn for at least the reasons discussed previously in regard to claims 23 and 24. The Examiner specifically cites Washburn at col. 20, lines 27 as disclosing "fixed criteria". However, that section of Washburn discusses deleting events, not playing back events according to a fixed criteria. Therefore, claim 25 is patentable over Washburn.

The Examiner rejected claims 33 - 35 and 42 under 35 U.S.C. Section 103(a) in view of U.S. Patent No. 5,524,193 (Covington et al.). These claims correspond to new claims 19 - 21 and 26. Applicants respectfully disagree with the Examiner's rejection of these claims and believe that these claims are patentable over Covington for at least the following reasons.

Covington et al. generally describes a method for annotating a text document or other media event. It allows authors to create a sequence of media events that are connected to a particular word or phrase (trigger) in a text document. (Covington at col. 2, lines 42 - 48) A trigger, and the sequence of media events connected to that trigger, can be associated with a particular filter, i.e. a particular grouping of triggers. (Covington at col. 2, lines 60 - 64) A connection map, i.e. a look-up table in the computer's memory, records the location of triggers, the filter with which each trigger is associated, and the media sequence connected to that trigger. (Covington at col. 3, lines 8 - 11) Users can read and explore work by using the Explore Mode of the media manager. (Covington at col. 7, lines 1 - 9) Triggers and event sequences can be created and edited in Analyze mode, while the Create mode can be used to add text to and edit the displayed work or to create a new document. (Covington at col. 7, lines 11 - 25)

The present invention is patentably distinct from Covington for at least the following reasons. Claim 19 states in part "determining which events and sequences of events constitute actions". Although Covington discusses that "a word, phrase or section to which a sequence of media events is connected will be referred to herein as a 'trigger'" (Covington at col. 2, lines 46 - 48), Covington does not disclose, teach or otherwise suggest determining which events and sequences of events constitute actions. Rather than recording all events, the present invention as defined in claim 19 determines which events and sequences of events constitute actions and records those determined actions.

Additionally, Covington does not disclose "recording the determined explanations such that a recorded explanation of a recorded action is associated with the recorded action" as recited in claim 19. The Examiner cited Covington at col. 3, lines 8 - 11 as disclosing this claim element, stating that the trigger is similar to the explanation. Applicants respectfully disagree. Covington defines a trigger as "the word, phrase or section to which a sequence of media events is connected" (col. 2, lines 46 - 48). Media events connected to a highlighted trigger may be accessed by selecting that trigger. (col. 5, lines 33 - 34). This is different from the claimed invention in which a recorded explanation of a recorded action is associated with the recorded action. Therefore, Applicants respectfully assert that claim 19, and its dependent claims 20 and 21, are patentable over Covington.

Regarding claim 26, the Examiner equates a connection map in Covington with an action class, a filter in Covington with specifying an action class and a trigger in Covington with the generic explanation of the action. However, the connection map specifies the location of a trigger and the filter it is associated with, as well as the media sequence connected to the trigger. (Covington at col. 2, lines 8 - 11) A trigger in Covington is a word, phrase or section to which a sequence of media events is connected. (Covington at col. 2, lines 46 - 48) The filter and trigger together determine which media sequence is played. (Covington at col. 5, lines 11 - 16)

An action class list, on the other hand, specifies action classes, where an action class is a category of events or type of events. (Specification, page 6, lines 17 - 19). An event is a low-level, common occurrence such as a cursor movement, pressing or releasing a mouse button or key, inserting a disk, or turning a dial. (Specification, page 15, lines 31 - 34) An action is a goal-directed set of events which has an effect or consequence on the software title or content, thereby progressing the development of the software title or content. (Specification, page 16, lines 3) An action class list associates an action class with a generic

explanation such that when an action belonging to that particular action class is played back, it is accompanied by the generic explanation associated with that action class.

Covington does not teach, disclose or otherwise suggest, aggregating events into actions and categorizing actions into action classes such that an action class has an associated generic explanation. For at least the reasons discussed above, Applicants respectfully request allowance of this claim, as well as dependent claim 27.

In conclusion, Applicants respectfully assert that claims 19 - 27 are patentable and in condition for allowance. In light of the discussion above, Applicants respectfully request allowance of such claims.

Respectfully submitted,
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MARKED UP VERSIONS OF AMENDMENTS

IN THE SPECIFICATION:

Please delete the paragraph beginning at page 5, line 24, and ending at page 6, line 6 and add the following paragraph:

According to the invention, authors, i.e. users of the present invention, can review the creation and evolution of all or part of a content such as a multimedia title. An authoring tool incorporating the invention comprises a mechanism for recording the development of a content and a mechanism for replaying all or part of the recording. The recording mechanism records the steps performed during the development or modification of a content in the order in which the steps are performed. The recording mechanism preferably records the steps at a granularity, i.e. level of detail, which provides insight into the creative process and is useful for instructing authors on the development of the content. Desirably, the authoring tool records events at a scale where each action has a meaning, or represents an entire task or action. As part of the granularity, the recording mechanism is preferably designed to record important information, ignoring irrelevant activity. The recording mechanism may provide authors with only a single granularity throughout or it may vary between a plurality of granularities, selecting an appropriate granularity based on context and/or user[]-specified[-]-preference.

On page 26, please delete the paragraph beginning at line 12 and ending at line 24 and add the following paragraph at page 26, line 12:

As shown in FIG. 9, the playback module 212 comprises an initializing means 376 for initializing the displayed software title for playback , means 378 for determining if at least one action remains to be played back, a selection means 380 for selecting which actions are to be played back and a playback means 382 for playing back one or more recorded actions. Optionally, the playback module further comprises a sorting means 384 for sorting the recorded actions list and/or a redundancy removal means 386 for preventing the playback of redundant actions and for summarizing a sequence of redundant actions into a single action and replacing that single action for the redundan[g]t actions such that the single action is played back instead. Appendix B contains pseudocode for an example of redundant actions being summarized into a single action.

On page 26, please delete the paragraph beginning at line 26 and ending at line 35 and add the following paragraph at page 26, line 26:

Preferably, the selecting means 380 allows an author to specify one or more criteria that actions generally must meet in order to be played back. Examples of criteria which can be specified include, but are not limited to, particular action(s), actions on particular object(s), and particular number of actions. For example, [a] an author may want actions played back from the creation of a particular object or may want actions played back which relate to the creation of objects on a particular screen. Likewise, an author may want the last 5 actions replayed or may want the first 10 actions replayed.